

Appl. No. : 10/017,916
 Filed : December 11, 2001

AMENDMENTS TO THE CLAIMS

1. (CURRENTLY AMENDED) An accommodating intraocular lens for implantation in an eye having a lens capsule and an optical axis, said lens comprising:

an optical axis configured to coincide substantially with the optical axis of the eye upon implantation of said lens;

an anterior portion comprised of a viewing element, said viewing element comprised of an optic having refractive power;

a posterior portion comprised of a viewing element, said anterior portion and posterior portion meeting at first and second apices of said intraocular lens, said apices lying substantially on a transverse axis of said lens, said viewing elements mounted to move relative to each other along the optical axis of the eye between an accommodated state and an unaccommodated state in response to force generated by the ciliary muscle of the eye;

a distending portion comprised of a first distending member ~~having a fixed end~~ attached to one of the anterior portion and the posterior portion, said first distending member spaced outwardly from said optical axis of said lens, an outermost portion of said first distending member and a free end sized and oriented to distend a portion of the lens capsule such that coupling of forces between the lens capsule and the intraocular lens is modified by said distending portion;

wherein said outermost portion of said first distending member is closer to said transverse axis, as measured along a direction generally parallel to the optical axis of the lens while said lens is viewed from the side, when said viewing elements are in said unaccommodated state, than when said viewing elements are in said accommodated state.

2. (CURRENTLY AMENDED) The lens of Claim 1, wherein said distending portion further comprises a second distending member attached to one of the anterior portion and the posterior portion, said second distending member having an outermost portion remote from said optical axis of said lens, said second distending member having a fixed end attached to one of the anterior portion and the posterior portion, and a free end sized and oriented to distend a portion of the lens capsule.

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3. (CURRENTLY AMENDED) The lens of Claim 2, wherein:
~~said lens includes an optical axis which is adapted to be substantially coincident with the optical axis of the eye upon implantation of said lens; and~~
 said first and second distending portions ~~members~~ are attached to said viewing element of said posterior portion and are arranged 180 degrees apart about said optical axis of said lens.

4. (ORIGINAL) The lens of Claim 1, wherein said first distending member further comprises an opening to permit cellular ingrowth by adjacent portions of the lens capsule.

5. (CURRENTLY AMENDED) The lens of Claim 1, wherein:
~~said lens includes an optical axis which is adapted to be substantially coincident with the optical axis of the eye upon implantation of said lens;~~
 said anterior portion further comprises an anterior biasing element and said posterior portion further comprises a posterior biasing element, said biasing elements being joined at said first and second apices which are, said first and second apices being spaced from said optical axis of said lens; and
 said first distending member is located angularly midway between said apices about said optical axis of said lens.

6. (CURRENTLY AMENDED) The lens of Claim 5, wherein:
 said distending portion further comprises a second distending member attached to one of the anterior portion and the posterior portion, said second distending member having an outermost portion remote from said optical axis of said lens, said second distending member having a fixed end attached to one of the anterior portion and the posterior portion, and a free end sized and oriented to distend a portion of the lens capsule; and
 said second distending member is located angularly midway between said apices about said optical axis of said lens and is arranged 180 degrees away from said first distending member about said optical axis of said lens.

7. (CURRENTLY AMENDED) The lens of Claim 1, wherein:

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~~said lens includes an optical axis which is adapted to be substantially coincident with the optical axis of the eye upon implantation of said lens; and~~

said ~~free end~~outermost portion of said first distending member is adapted to remain at a substantially constant distance from said optical axis as said viewing elements move relative to each other.

8. (WITHDRAWN)

9. (WITHDRAWN)

10. (WITHDRAWN)

11. (CURRENTLY AMENDED) An accommodating intraocular lens for implantation in an eye having an optical axis, said lens comprising:

an anterior portion comprised of an anterior viewing element and an anterior biasing element connected to said anterior viewing element, said anterior viewing element comprised of an optic having refractive power;

a posterior portion comprised of a posterior viewing element and a posterior biasing element connected to said posterior viewing element;

an optical axis of said lens which is adapted to be substantially coincident with the optical axis of the eye upon implantation of said lens;

said anterior and posterior viewing elements mounted to move relative to each other along the optical axis of the eye between an accommodated state and an unaccommodated state in response to force generated by the ciliary muscle of the eye, said biasing elements being joined at first and second apices which are spaced from said optical axis of said lens, said apices lying substantially on a transverse axis of said lens;

a distending member ~~extending~~disposed between said first and second apices and spaced outwardly from said optical axis of said lens, an outermost portion of said distending member being closer to said transverse axis, as measured along a direction generally parallel to the optical axis of the lens while said lens is viewed from the side, than when said viewing elements are in said accommodated state.

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12. (WITHDRAWN)

13. (WITHDRAWN)

14. (WITHDRAWN)

15. (CURRENTLY AMENDED) An accommodating intraocular lens for implantation in an eye having a lens capsule and an optical axis, said lens comprising:

an anterior portion comprised of a viewing element, said viewing element comprised of an optic having refractive power;

a posterior portion comprised of a viewing element, said viewing elements mounted to move relative to each other along the optical axis between an accommodated state and an unaccommodated state in response to force generated by the ciliary muscle of the eye, said viewing elements being separated by a greater distance in the accommodated state than in the unaccommodated state, said viewing elements being biased toward the accommodated state;

a distending portion comprised of a distending member attached to one of said portions, and oriented to distend the lens capsule, upon implantation of the lens in the eye, such that the distance between a posterior side of the posterior viewing element and an anterior side of the anterior viewing element along the optical axis is less than 3 mm when the ciliary muscle is relaxed and the lens is in an unaccommodated state.

16. (CURRENTLY AMENDED) An accommodating intraocular lens for implantation in an eye having a lens capsule and an optical axis, said lens comprising:

an anterior portion comprised of a viewing element, said viewing element comprised of an optic having refractive power;

a posterior portion comprised of a viewing element, said viewing elements mounted to move relative to each other along the optical axis between an accommodated state and an unaccommodated state in response to force generated by the ciliary muscle of the eye, said viewing elements being separated by a greater distance in the accommodated

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state than in the unaccommodated state, said viewing elements being biased toward the accommodated state;

a distending portion comprised of a distending member attached to one of said portions, and configured to distort the natural shape of the lens capsule and remove slack such that the distending members tension the capsule~~oriented to distend the lens capsule,~~
~~said distending causing said lens capsule to act on at least one of the posterior and anterior portions such that separation between said viewing elements is reduced when the ciliary muscle is relaxed and the lens is in an unaccommodated state.~~

17. (CURRENTLY AMENDED) An accommodating intraocular lens for implantation in an eye having a lens capsule and an optical axis, said lens comprising:

an anterior portion comprised of an anterior viewing element and an anterior biasing element connected to said anterior viewing element, said anterior viewing element comprised of an optic having refractive power;

a posterior portion comprised of a posterior viewing element and a posterior biasing element connected to said posterior viewing element, said viewing elements mounted to move relative to each other along the optical axis between an accommodated state and an unaccommodated state in response to force generated by the ciliary muscle of the eye, said viewing elements being separated by a greater distance in the accommodated state than in the unaccommodated state, said viewing elements being biased toward the accommodated state by said biasing elements;

a distending member attached to the posterior portion, said distending member separate from said biasing ~~members~~ elements and ~~reshaping~~ configured to reshape the lens capsule such that force coupling between the ciliary muscle and the lens is modified to provide greater relative movement between said viewing elements when the lens moves ~~between to~~ between to an unaccommodated state ~~and from~~ and from an accommodated state in response to said ciliary muscle.

18. (CURRENTLY AMENDED) An accommodating intraocular lens for implantation in an eye having an optical axis and a lens capsule, said lens comprising:

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an anterior portion comprised of an anterior viewing element and an anterior biasing element connected to said anterior viewing element, said anterior viewing element comprised of an optic having refractive power;

a posterior portion comprised of a posterior viewing element and a posterior biasing element connected to said posterior viewing element;

an optical axis of said lens which is adapted to be substantially coincident with the optical axis of the eye upon implantation of said lens;

said anterior and posterior viewing elements mounted to move relative to each other along the optical axis of the eye between an accommodated state and an unaccommodated state in response to force generated by the ciliary muscle of the eye, said biasing elements being joined at first and second apices which are spaced from said optical axis of said lens, said apices lying substantially on a transverse axis of said lens;

first and second distending members, each of said members attached to one of said anterior and posterior portions and extending away from the optical axis of the lens, said first member disposed between said apices on one side of the intraocular lens and said second member disposed between said apices on the opposite side of the intraocular lens, said distending members oriented to distend portions of the lens capsule such that said viewing elements are relatively movable through a range of at least 1.0 mm in response to contraction of said ciliary muscle;

wherein said first distending member has a first outwardmost portion spaced outwardly from said optical axis of said lens and said second distending member has a second outwardmost portion spaced outwardly from said optical axis of said lens, said outwardmost portions being closer to said transverse axis, as measured along a direction generally parallel to the optical axis of the lens while said lens is viewed from the side, when said viewing elements are in said accommodated state, than when said viewing elements are in said unaccommodated state.

19. (CURRENTLY AMENDED) An accommodating intraocular lens for implantation in an eye having an optical axis, said lens comprising:

an optical axis configured to coincide substantially with the optical axis of the eye upon implantation of said lens;

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an anterior portion comprised of a viewing element, said anterior viewing element comprised of an optic having a diameter of approximately 3 mm or less and a refractive power of less than 55 diopters;

a posterior portion comprised of a viewing element, said viewing elements mounted to move relative to each other along the optical axis of the eye between an accommodated state and an unaccommodated state in response to force generated by the ciliary muscle of the eye, said anterior and posterior portions being joined at first and second apices which are spaced from said optical axis of said lens, said apices lying substantially on a transverse axis of said lens;

a distending portion comprised of a distending member ~~having a fixed end~~ attached to the posterior portion, said distending member spaced outwardly from said optical axis of said lens, an outermost portion of said distending member and a free end sized and oriented to distend a portion of the lens capsule such that coupling of forces between the lens capsule and the intraocular lens is increased;

wherein said outwardmost portion is closer to said transverse axis, as measured along a direction generally parallel to the optical axis of the lens while said lens is viewed from the side, when said viewing elements are in said accommodated state, than when said viewing elements are in said unaccommodated state.

20. (WITHDRAWN)

21. (WITHDRAWN)

22. (WITHDRAWN)

23. (WITHDRAWN)

24. (NEW) The lens of Claim 1, wherein said first distending member is configured to distort the lens capsule such that the shape of the capsule is asymmetric about a plane perpendicular to the optical axis and passing through said apices.

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25. (NEW) The lens of Claim 11, wherein said eye has a lens capsule and said distending member is configured to distort the lens capsule such that the shape of the capsule is asymmetric about a plane perpendicular to the optical axis and passing through said apices.

26. (NEW) The lens of Claim 18, wherein said first and second distending members are configured to distort the lens capsule such that the shape of the capsule is asymmetric about a plane perpendicular to the optical axis and passing through said apices.

27. (NEW) An accommodating intraocular lens, comprising:
 an anterior viewing element;
 plural anterior translation members extending from said anterior viewing element,
 said plural anterior translation members comprising a first anterior translation member
 and a second anterior translation member;
 a posterior viewing element;
 plural posterior translation members extending from said posterior viewing
 element, said plural posterior translation members comprising a first posterior translation
 member and a second posterior translation member;
 said first anterior translation member joined to said first posterior translation
 member at a first apex of said lens;
 said second anterior translation member joined to said second posterior translation
 member at a second apex of said lens;
 said translation members biasing said viewing elements apart toward an
 accommodated state;
 a first posterior distending member extending from said posterior viewing element
 between said first and second posterior translation members;
 a second posterior distending member extending from said posterior viewing
 element between said first and second posterior translation members;
 said first and second posterior distending members spaced from all of said plural
 anterior translation members when said viewing elements are in said accommodated state.